

Cell Biology

MURINE IMMUNE RESPONSE IS ENHANCED BY ANTIBACTERIAL AMINOCYCLITOL ANTIBIOTICS

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While antibiotics are widely used as therapeutic agents to treat bacterial infections, less is understood about their ability to influence immune function in the host. The aminocyclitol molecules, spectinomycin and trospectomycin (Pharmacia-Upjohn-Monsanto Company), are antibiotics used to treat bacterial infections and which are known to be intracellularly concentrated by phagocytic cells in the host. Such concentration of antibiotics correlates with effects on immune response including enhanced microbicidal activity and enhanced delayed type hypersensitivity (DTH) as was seen in our previous studies with clindamycin (JAC 23:721-728, 1989) and in other studies. Aminocyclitol molecules inhibit protein synthesis in prokaryotic bacteria and thus have no effect on the eukaryotic yeast targets (*Candida lusitanae*) that were employed. We have examined the effect of spectinomycin on peritoneal-derived murine phagocytes (neutrophils and macrophages) ability to kill candidal yeasts following drug exposure of the phagocytic cells in vivo or in vitro or with both exposures. Drug effects on the ability of mice to clear intravenously administered yeasts from their organs also was examined. Spectinomycin effects on murine DTH response to the sensitizing chemical dinitrofluorobenzene (Sigma) was measured using an ear-thickness assay. Under most of the conditions tested yeast killing and DTH were drug enhanced. Such a boost in immune response clearly can be a benefit to the host. Therefore use of antibacterial antibiotics should not only take into account direct antimicrobial effects, but also the overall effects they have on the immune system of the host.